

**REMARKS**

Claim 16 is amended to more particularly point out that the recited mat material comprises a plurality of layers of a ceramic fibrous material and has a reflective surface facing the inlet, as described beginning at page 6, line 12. Claims 6, 8 and 10 are made dependent upon independent claim 16.

*Claim Rejection based upon Kneidel*

Claim 16 was rejected under 35 U.S.C. § 102(e) as anticipated by United States Patent No. 6,326,095, issued to Kneidel in 2001.

Kneidel describes an apparatus comprising a reformer that includes a bed of catalyst 13, see Fig. 2. The rejection points to a screen 15 used to constrain the catalyst see col. 3, lines 47-49. In contrast, the present invention comprises a mat material that functions as an insulation material, radiation shield, filtration device, flame arrestor and thermal barrier, see page 6, lines 14-18. Moreover, the mat material in accordance with the present invention comprises multiple layers of a ceramic fibrous material. Kneidel points to a screen having strength sufficient to retain a catalyst bed, as opposed to a fibrous mat that would not prevent shifting of the bed. Moreover, the screen in Kneidel does not provide a thermal barrier to prevent heat from the reformer from causing premature reactions in the gas prior to the catalyst bed. Thus, Kneidel does not anticipate or even suggest Applicant's

invention.

Claim 16 is directed to a fuel reformer system that includes a reformer catalyst substrate and mat material coupled to the inlet of the substrate. Kneidel shows a screen retaining a bed, and does not point to an arrangement of a substrate and a mat. In accordance with the claim, the mat material comprises a plurality of layers, whereas Kneidel shows only one layer for the screen. Moreover, although Kneidel does not provide details, it appears to contemplate a metal screen with strength to support the bed, and would not point a practitioner to ceramic fibrous mat. Thus, Keidel does not teach or even suggest Applicant's invention as set forth in claim 16.

Accordingly, it is respectfully requested that the rejection of claim 16 based upon Kneidel be reconsidered and withdrawn, and that the claim be allowed.

*Claims Rejection based upon Kneidel and secondary references*

The remaining claims in the case, some of which have been cancelled and the remainder of which have been made dependent upon claim 16, were rejected under 35 U.S.C. § 103 as unpatentable over Kneidel in combination with one or more of United States Patent No. 4,444,109, issued to Gifford in 1984; United States Patent No. 5,175,062, issued to Farooque et al. in 1992; United States Patent No. 5,342,434, issued to Wu in 1994; and United States Patent No. 4,894,070, issued to Keidel et al.

in 1990.

For the reasons set forth above, Kneidel does not teach or suggest a reformer that includes a mat material formed of multiple layers of ceramic fibrous material at the inlet to a catalyst substrate, as called for in claim 16. Moreover, the secondary references also fail to show these features.

Gifford is applied to a show a flame arrestor. However, Gifford is directed to an explosive detonation system, see col. 2, beginning at line 34, and does not contemplate a fuel reformer. It is pointed out that Applicant's system also preferably includes a flame arrestor 90 in combination with a mat material, see page 8, beginning at line 11. Nothing in Gifford contemplates a mat material with the flame arrestor. Furthermore, the flame arrestor in Gifford is formed of a stainless steel micro filter, col. 4, lines 18-25. Thus, even when combined with Kneidel, Gifford does not lead the practitioner to include a ceramic fibrous mat material, so as to arrive at a system in accordance with Applicant's claim 16.

Farooque et al. is applied to show a reforming unit 7A in Fig. 2 that includes inert material 7-16 adjacent the inlet. The inert material helps to promote uniform temperatures within the unit, col. 5, lines 6-21. Details of the inert material are not provided. However, nothing in Farooque et al. describes a mat material that includes a plurality of layers of a ceramic fibrous material and has a reflective surface facing the catalyst bed. Thus, even when combined with Kneidel, the references do not

lead the practitioner to the reformer system having a mat material with the features set forth in claim 16.

Wu is cited to show a gas permeable material. More particularly, Wu describes an organic coating applied to passageways within a substrate material, col. 1, beginning at line 35. The coated product is useful for medical devices or industrial filtration, col. 3, lines 50-53. Wu does not disclose a fuel reformer, or suggest use of the coated material at high temperatures such as experienced within a fuel reformer. Indeed, because of the organic nature of the coating, it is expected that such coating would decompose at such high temperatures. Thus, there is nothing in either Kneidel or Wu to lead the practitioner to substitute the coated material in Wu within the reformer of Kneidel. Therefore, the references cannot be fairly combined as pointing the practitioner to Applicant's invention in claim 16.

Keidel et al. is cited to disclose a high temperature binder for bonding short tubes to form elongated tubes for purposes of forming a filter. However, Keidel et al. does not disclose a fuel reformer. Thus, nothing in Keidel et al. points to a mat material coupled to the inlet to a reformer catalyst substrate. Moreover, Keidel et al. does not show a material adapted to constrain a catalyst bed. Thus, there is nothing in the combination of the references to lead the practitioner to select the tubes in Keidel et al., form the material into a mat, and substitute the mat for the stainless steel retainer in Kneidel. Therefore, the references do not lead the practitioner to Applicant's invention.

Claim 16 is directed to Applicant's fuel reformer system that includes a reformer catalyst substrate and a mat material coupled to the inlet to the substrate. The mat material comprises a plurality of layers of ceramic fibrous material and has a reflective surface facing the inlet. As discussed above, the primary reference Kneidel uses a stainless steel screen to retain the bed. Given the construction in Kneidel, the practitioner is not lead to substitute a fibrous mat to provide the strength and rigidity needed to support the bed. Farooque et al., the only secondary reference that relates to a fuel reformer, also does not show a fibrous mat. The remaining secondary references are applied to show isolated features of the dependent claims, but do not relate to fuel reformers, or show a fibrous mat material in an application akin to a fuel reformer. Thus, the references, even when combined, do not lead the practitioner to Applicant's fuel reformer system in claim 16. It follows, therefore, that the references cannot suggest the fuel reformer system with the additional feature in the claims dependent upon claim 16.

Therefore, it is respectfully requested that claims 6, 8 and 10 be reconsidered and withdrawn, and that the claims be allowed.

*Conclusion*

It is believed, in view of the amendments and remarks herein, that all grounds of rejection of the claims have been addressed and overcome, and that all claims are in condition for allowance. If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,



Douglas D. Fekete  
Reg. No. 29,065  
Delphi Technologies, Inc.  
Legal Staff – M/C 480-410-202  
P.O. Box 5052  
Troy, Michigan 48007-5052

(248) 813-1210